How to Unlock the Value of Legacy Data for Better Decision-Making

MARKET TRENDS REPORT

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Introduction

Data is the lifeblood of government operations, from law enforcement and tax administration to health care and social services. Data is at the core of traditional services, as well as the new generation of digital initiatives. Across all levels of government, agencies are looking to improve governance by analyzing and sharing data.

Meanwhile, initiatives such as the White House's Fifth Open Government National Action Plan are pushing agencies to make their data more transparent and available to the public.

The challenge is that many agencies can't make use of all their data, because a lot of it is siloed in legacy systems and formats. Modern data solutions are designed to work with state-of-the-art applications and devices in cloud environments, not with mainframes and other legacy systems.

Accessing the data isn't the problem; the challenge is integrating it so that it can be easily put into the right hands in usable formats. Agencies need a holistic view of their data, regardless of its original source, in a single location, in a usable format and accessible via the cloud.

For this market trends report, GovLoop partnered with Software AG Government Solutions, an enterprise software company that specializes in digital integration. We'll look at how agencies can overcome the challenges of making use of legacy data by moving it to the cloud, explain best practices for integrating the data and offer examples of how it can help agencies perform their missions.

By The Numbers

Legacy Systems Are Holding Agencies Back

Aging IT systems are stifling the ability of government organizations to fulfill their missions, according to a 2021 report from KPMG that surveyed executives in federal civilian agencies, the Department of Defense and state governments.

To what extent has the state of your IT systems hurt your agency's ability to integrate new tools & technologies?

- 12% Extremely
- 19% Not at all
- 22% Very
- 21% Somewhat
- 26% Moderately
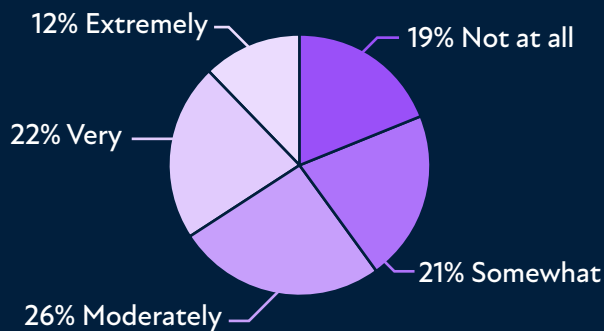
To what extent has the state of your IT systems hurt your agency's ability to attract or recruit new talent?

- 12% Extremely
- 28% Not at all
- 14% Very
- 24% Somewhat
- 22% Moderately
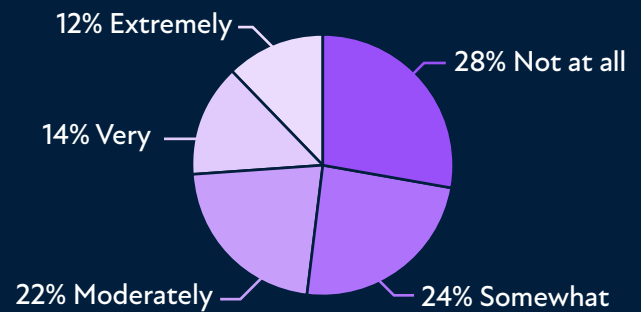
Organizations Can't Access All of Their Data

To what extent is data readily usable across the organization for those who need it?

- 7% Completely Siloed
- 12% Fully Accessible
- 36% Somewhat Siloed
- 45% Somewhat Accessible
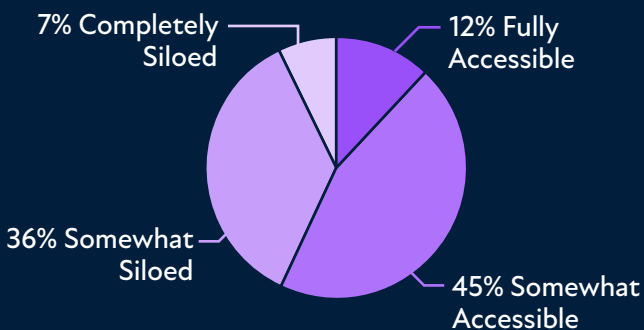
Source: Workday Global Report: Closing the Acceleration Gap

50%
of state chief information officers said a majority of their applications are in need of modernization.

80%
of the more than $100 billion the federal government spends each year on IT and cyber-related investments goes toward operating and maintaining existing IT, including legacy systems.

79%
of government officials said the age of their IT systems negatively impacts their missions.

Turning Fragmented Data Into a Holistic View

The Challenge: Agencies Are Awash in Data They Can't Use

Many legacy systems have been around for 20 or 30 years for a reason — they are mission-critical. They have been at the center of what an agency does, performing critical, transaction-based functions while collecting vast amounts of information.

"Legacy systems hold a treasure trove of data that can be used to help constituents get what they need," said Chris Oskuie, Vice President of State and Local Government and Education at Software AG Government Solutions.

The challenge is putting that data to use, especially as agencies evolve toward distributed cloud-based systems. Agencies often face common difficulties in making use of that data.

- Newer systems may be managed by different people than those managing legacy systems, many of whom may be approaching retirement.

- Data in legacy systems is often stored in different formats, with different nomenclature.

An inability to make use of that data can impact government services. For example, the federal Centers for Medicare and Medicaid Services (CMS) recently said that many states were mistakenly cutting children off from Medicaid services while performing a large-scale CMS-requested eligibility review.

Oskuie said it's likely that, in some cases, data attached to a child, such as a parent's income, could be in a legacy format that's "not being married up" to other pertinent data. "It's a data mismatch," he said. "They're not getting the full picture of that person, that child and why they should be eligible for Medicaid."

Agencies need to be able to use that legacy data in common formats that allow the participation of all stakeholder groups. "You want to allow the nontechnical people to access the data as they know it and be able to transform that into meaningful information that other people can understand," said Bob Jeffcott, Principal Systems Engineer at Software AG Government Solutions.

The Solution: An Integrated Enterprise

Agencies at all levels of government are in various stages of modernizing their systems. But while this can be a long, challenging process, modernizing legacy data can be done fairly simply with data integration. And modernizing that data is essential to enabling real-time, data-driven decision-making.

Making data usable involves three key steps:

- **Liberate the data.** Create a comprehensive data dictionary, built on understanding the structure and organization of mainframe data, identifying data stores and mapping data elements to their applications. A data integration platform will translate data from mainframe languages to usable formats while maintaining the mainframe's security.

- **Connect it through data repositories.** Converging data from both legacy systems and new sources allows you to transform and enhance it into useful information for real-time decision-making. Analysts and data scientists can easily search the data for useful information.

- **Build the data pipeline.** Pre-built connectors and adapters can automate the seamless movement of data to target systems, such as a centralized cloud data warehouse like Snowflake. This process removes the need for time-consuming and error-prone custom coding, while making sure the data flows are scalable and reliable.

Integrating legacy data allows agencies to deliver on a wide variety of public services.

In health care, for example, integrating electronic health records, hospital systems and disease surveillance systems enables real-time monitoring of health trends or early detection of outbreaks. Meanwhile, cities can optimize urban planning, traffic management and waste management, among many other public services. And emergency response agencies can factor in everything from situational awareness to weather forecasts in planning responses.

A data integration platform working with a data cloud can enable intra- and cross-agency data-sharing and collaboration, helping agencies better fulfill their missions.

Best Practices in Data Integration

Agencies looking to implement a data integration solution should be sure to include four key capabilities.
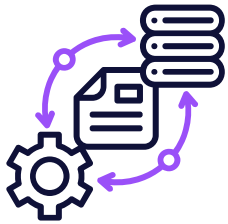
Data Transformation

A data transformation engine ideally would have a user-friendly interface and provide out-of-the-box connectivity for the full range of databases, message queues, data stores and operational systems, mainframes included. Pre-built processors can format and enhance data as it moves to a data cloud, while adapting to data drift to prevent pipeline breakages.
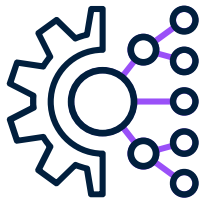
Intelligent Pipelines

Secure connectivity to data sources, whether on premises or in the cloud, enables agencies to connect new and legacy environments. By applying data controls across environments, agencies can streamline data integration and easily move between a data cloud and on-premises systems. Intelligent pipelines are well suited to hybrid environments, adapting to changing data formats and schemas. "Instead of trying to fine-tune pipes that you already created, the controls allow you to focus on getting more data to the cloud," Oskuie said.

Operational Analytics, Advanced Analytics and Reporting

The combination of a transformation engine and a data cloud with APIs and modeling tools allows data scientists and analysts to design customized data transformation jobs employing advanced analytics and reporting. It enables agencies to efficiently manage and process their data while ensuring data security and compliance.

Data Capture Operations

A data integration platform can provide secure connections to data sources and a data cloud, monitor and manage pipelines, and transform, join and cleanse data for use in reporting, analytics and data science initiatives. By using pre-built change data capture processes, which capture changes to data in a database and send them to another system, agencies can ensure continuous replication of data from core systems to a data cloud.

Don't Overdo it

Another good practice to follow in implementing data integration is starting small with a manageable project. "Don't let perfection be the enemy of good," Jeffcott said. "You can start small and grow from there."

He mentioned one customer that started a data integration project by sharing information across three data sources. After the benefits of being able to put information into the hands of subject-matter experts became obvious, other groups and organizations started asking to join the project. "Now they're up to 200 different data sources and organizations that are sharing information. And it was because they started small, but they showed value immediately," he said.

Case Study: State Integrates Data to Help Battle Opioid Crisis

When the opioid crisis hit, police and public health organizations were scrambling to identify hotspots where people were using illicit drugs and likely overdosing.

One state that already had a very robust information-sharing system within its justice network took on the responsibility to collect, analyze and share information from multiple sources involved in combatting the crisis.

The initiative involved combining information from a variety of criminal justice databases, including arrests, incidents and other episodes related to opioid use. Added to the mix was hospital information such as admittance records, as well as information on other factors, such as the availability of Narcan (naloxone), a nasal spray that can reverse an opioid overdose.

The system, hosted by the Department of Health and Human Services, made it easier to identify areas where overdoses were clustered.

The data being pulled int this information-sharing system included data being held in legacy systems, and making use of it wouldn't have been possible without a solution that allowed users to work with the data in formats they were familiar with.

By making use of that data, municipal agencies were better able to deploy resources to confront the crisis and, in some cases, respond quickly enough to avert overdoses. It also increased the efficiency of the data-sharing operation, which would have been expensive to replicate without the tools to integrate legacy data.

"It wasn't just saving money, it was saving lives by marrying data from different organizations to help deploy the resources where they needed to go," Jeffcott said.

HOW SOFTWARE AG GOVERNMENT SOLUTIONS HELPS

Software AG Government Solutions has extensive experience in working with government agencies on data integration. The company's Built for Government initiative is designed to bring full data integration — including data in legacy systems — to federal, state and local governments, with customers including the IRS, the Pennsylvania Justice Network and the U.S. Navy.

Its solution, authorized through the Federal Risk and Authorization Management Program (FedRAMP), ensures secure data integration for agencies, supporting a full range of initiatives, including reporting, operational analytics, data science and data-sharing. It includes tools and capabilities such as StreamSets, Transformer, Data Collector and Data Cloud.

Software AG Government Solutions partners with Snowflake and Amazon Web Services to deliver continuous and secure data ingestion into the Snowflake Data Cloud.

Part of Software AG Government Solutions' message to agencies is that data modernization doesn't have to be difficult. "Access to legacy systems is not a technical issue. The tools are available," Oskuie said. "Pick a use case, do a proof of concept, get the value, prove it out and grow from there."

Conclusion

Digital transformation projects have brought government agencies forward into a new age of distributed, cloud-based computing that generates massive amounts of data. But much of the data that agencies need to perform their missions is stored in older, siloed — though mission-critical — mainframes or other legacy systems.

Making that legacy data accessible in usable formats and combining it with data from new sources is critical to efficient agency operations, data-sharing initiatives and meeting compliance requirements. It requires a data integration solution that provides a holistic view of data across the enterprise and provides the tools to enable advanced analytics and any other steps necessary to put it to use.

A data integration platform, enhanced through industry partnerships, enables agencies to move legacy data to an accessible cloud by integrating it with information from multiple new sources and performing other advanced analytical operations. It's the best way for an agency to make use of all of its available data to support accurate and timely decision-making.

ABOUT THE TECHNOLOGY

Software AG helps you create incredibly connected experiences for your constituents, employees and partners with an enterprise-grade iPaaS that integrates anything, anywhere, any way you want.

To learn more, visit
www.softwareaggov.com

Snowflake's Government & Education Data Cloud enables data sharing, collaboration, and informed decision-making in the public sector. Organizations can modernize and accelerate cloud migration, as well as collaborate and share data within and across agencies and departments. It also provides public sector leaders with holistic views of citizens, students, and patients and helps prevent and protect against fraud, waste, and abuse.

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ABOUT GOVLOOP

GovLoop's mission is to "connect government to improve government." We aim to inspire public-sector professionals by serving as the knowledge network for government. GovLoop connects more than 300,000 members, fostering cross-government collaboration, solving common problems and advancing government careers. GovLoop is headquartered in Washington, D.C., with a team of dedicated professionals who share a commitment to connect and improve government.

For more information about this report, please reach out to info@govloop.com.